

not perfectly incorporate. And to the increase of the opacity of these Bodies it conduces something, that by the 23th Observation the reflexions of very thin transparent substances are considerably stronger than those made by the same substances of a greater thickness.

## P R O P. IV.

*The parts of Bodies and their Interstices must not be less than of some definite bigness, to render them opaque and coloured.*

For the opaque Bodies, if their parts be subtilly divided, (as Metals by being dissolved in acid menstruums, &c.) become perfectly transparent. And you may also remember, that in the eighth Observation there was no sensible reflexion at the superficies of the Object-Glasses where they were very near one another, though they did not absolutely touch. And in the 17th Observation the reflexion of the Water-bubble where it became thinnest was almost insensible, so as to cause very black Spots to appear on the top of the Bubble by the want of reflected Light.

On these grounds I perceive it is that Water, Salt, Glass, Stones, and such like substances, are transparent. For, upon divers considerations, they seem to be as full of pores or interstices between their parts as other Bodies are, but yet their parts and interstices to be too small to cause reflexions in their common surfaces.

P R O P.

## P R O P. V.

*The transparent parts of Bodies according to their several sizes must reflect rays of one Colour, and transmit those of another, on the same grounds that thin Plates or Bubbles do reflect or transmit those rays. And this I take to be the ground of all their Colours.*

For if a thin'd or plated Body, which being of an even thickness, appears all over of one uniform Colour, should be slit into threds, or broken into fragments, of the same thickness with the plate; I see no reason why every thred or fragment should not keep its Colour, and by consequence why a heap of those threds or fragments should not constitute a mass or powder of the same Colour, which the plate exhibited before it was broken. And the parts of all natural Bodies being like so many fragments of a Plate, must on the same grounds exhibit the same Colours.

Now that they do so, will appear by the affinity of their properties. The finely coloured Feathers of some Birds, and particularly those of Peacocks Tails, do in the very same part of the Feather appear of several Colours in several positions of the Eye, after the very same manner that thin Plates were found to do in the 7th and 19th Observations, and therefore arise from the thinness of the transparent parts of the Feathers; that is, from the slenderness of the very fine Hairs, or *Capillamenta*, which grow out of the sides of the grosser lateral branches or fibres of those Feathers. And to the same purpose it is, that the Webs of some Spiders by being